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Notice of Allowability	Application No.	Applicant(s)	
	10/782,527	ZHANG ET AL.	
	Examiner	Art Unit	
	Kuen S. Lu	2167	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--
 All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to RCE filed 7/24/2007.
2. ☒ The allowed claim(s) is/are 1 and 4-27 (renumbered to 1-25).
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date 10/9/2007.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>10/8/07</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

2. The Action is responsive to Applicants' Amendment and RCE filed July 24, 2007.

3. After a thorough search and examination of the present application, and in light of the following:

prior art made of record;

Examiner's Amendments made October 9, 2007 that was authorized to amend claims 1-3, 15, 17 and 23; and

an update search on prior art conducted in domains (EAST, NPL-ACM, Google, NPL-IEEE, etc);

Claims 1 and 4-27 (renumbered to 1 to 25) are allowed.

Examiner's Amendments

4. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to Applicants, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee. Authorization for this Examiner's Amendments,

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listed below was given on October 8, 2007 in a telephone interview with Mr. Christen M. Fairborn, Registration Number 55,164.

4.1. Please amend claims 1-3, 15, 17 and 23 follows:

1. (Currently Amended) A method for building a data overlay, comprising:

providing a distributed hash table (DHT) that governs the insertion and retrieval of objects into and from a peer-to-peer system, wherein the distributed hash table includes a logical space including a plurality of DHT nodes having an associated plurality of DHT zones; and

building the data overlay as a data structure on top of the logical space of the distributed hash table by associating objects in the data structure with the DHT nodes, and by establishing links between the objects in the data structure, ~~wherein the data structure facilitates dissemination of information to the DHT nodes and gathering of information from the DHT nodes;~~

wherein each link includes a first field that provides a hardwired pointer that points from a first object to a second object, and a second field that provides a soft-state pointer that points from the first object to a DHT node which hosts the second object;

wherein the building of the data overlay makes use of a first primitive for setting a reference that establishes a pointer to an object in the distributed hash table, a second primitive for returning an object referenced by a pointer, and a third primitive for deleting an object referenced by a pointer; and

wherein the data structure facilitates dissemination of information to the DHT nodes and gathering of information from the DHT nodes.

2. (Canceled)

3. (Canceled)

15. (Currently Amended) A computer readable store having stored thereon a data structure, comprising:

a logical space of a distributed hash table (DHT), including a plurality of DHT nodes having a plurality of associated DHT zones, wherein the distributed hash table governs the insertion and retrieval of objects into and from a peer-to-peer system;

a data overlay implemented as a data structure on top of the logical space of the distributed hash table logical space by associating objects in the data structure with the DHT nodes, and by establishing links between the objects in the data structure, ~~wherein the data overlay uses services provided by the distributed hash table in routing from one object to another in the data structure, and;~~

wherein each link includes a first field that provides a hardwired pointer that points from a first object to a second object, and a second field that provides a soft-state pointer that points from the first object to a DHT node which hosts the second object;

wherein building of the data overlay makes use of a first primitive for setting a reference that establishes a pointer to an object in the distributed hash table, a second primitive for returning an object referenced by a pointer, and a third primitive for deleting an object referenced by a pointer; and

wherein the data structure facilitates dissemination of information to the DHT nodes and gathering of information from the DHT nodes.

17. (Currently Amended) A method for passing data through a data overlay, comprising:

providing a distributed hash table (DHT) that governs the insertion and retrieval of objects into and from a peer-to-peer system, wherein the distributed hash table includes a logical space including a plurality of DHT nodes having a plurality of associated DHT zones;

building a data overlay as a data structure on top of the logical space of the distributed hash table by associating objects in the data structure with the DHT nodes, and by establishing links between the objects in the data structure;

wherein each link includes a first field that provides a hardwired pointer that points from a first object to a second object, and a second field that provides a soft-state pointer that points from the first object to a DHT node which hosts the second object;

wherein the building of the data overlay makes use of a first primitive for setting a reference that establishes a pointer to an object in the distributed hash table, a second primitive for returning an object referenced by a pointer, and a third primitive for deleting an object referenced by a pointer; and

wherein the data overlay defines a plurality of interconnected nodes, and wherein the data structure facilitates dissemination of information to the DHT nodes and gathering of information from the DHT nodes; and

routing data through the data overlay by passing the data through its interconnected nodes.

23. (Currently Amended) A peer-to-peer system including a plurality of machines interacting in peer-to-peer fashion, comprising:

a logical space of a distributed hash table (DHT), including a plurality of DHT nodes having a plurality of associated DHT zones, wherein the distributed hash table governs the insertion and retrieval of objects into and from the peer-to-peer system; and

a data overlay implemented as a data structure on top of the logical space of the distributed hash table by associating objects in the data structure with the DHT nodes, and by establishing links between the objects in the data structure, wherein the data overlay uses services provided by the distributed hash table in routing from one object to another in the data structure, and wherein the data structure facilitates dissemination of information to the DHT nodes and gathering of information from the DHT nodes,

wherein each link includes a first field that provides a hardwired pointer that points from a first object to a second object, and a second field that provides a soft-state pointer that points from the first object to a DHT node which hosts the second object;

wherein building of the data overlay makes use of a first primitive for setting a reference that establishes a pointer to an object in the distributed hash table, a second primitive for returning an object referenced by a pointer, and a third primitive for deleting an object referenced by a pointer;

wherein the data overlay uses services provided by the distributed hash table in routing from one object to another in the data structure, and wherein the data structure facilitates dissemination of information to the DHT nodes and gathering of information from the DHT nodes; and

wherein the logical space of the distributed hash table and the data overlay are implemented in distributed fashion in respective stores of the plurality of machines in the peer-to-peer system.

Reason for Allowable

5. The following is the Examiner's statement of reasons for allowance:

In the Examiner's Office Action, dated 3/26/2007, the Final Rejection under 35 U.S.C. § 103 rejections was made mainly based on the reference over Pabla et al.:

"DISTRIBUTED INDEXING OF IDENTITY INFORMATION IN A PEER-TO-PEER NETWORK", U.S. Patent Application Publication 2004/0064693, published April 1, 2004, hereafter "Pabla"; in view of Xie: "B2P Systems Based on Distributed Hash Table", Ming Xie, Computer Science, University of Ottawa, September 26, 2003.

In a response to the Office Action of 3/26/2007, in a lengthy remarks, Applicants argued that Pabla and/or Xie do not teach or suggest the combination of features recited in claim 1, for example, "building the data overlay as a data structure on top of the logical space of the distributed hash table by associating objects in the data structure with the DHT nodes, and by establishing links between the objects in the data structure, wherein the data structure facilitates dissemination of information to the DHT nodes and gathering of information from the DHT nodes". Applicant further argued that the two references fail to teach "wherein the data overlay has a topology of a tree, the tree having a plurality of tree nodes associated with respective DHT nodes, wherein each tree node has a respective tree node zone associated therewith which

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corresponds to a part of the logical space of the distributed hash table" as recited in claim 4.

Based on the arguments and subject matter as described above, and further reviewed the subject matter of claims 1-4 as a whole, Examiner is persuaded that a combined subject matter of "building the data overlay as a data structure on top of the logical space of the distributed hash table by associating objects in the data structure with the DHT nodes, and by establishing links between the objects in the data structure, wherein the data structure facilitates dissemination of information to the DHT nodes and gathering of information from the DHT nodes", "each link includes a first field that provides a hardwired pointer that points from a first object to a second object, and a second field that provides a soft-state pointer that points from the first object to a DHT node which hosts the second object" and building of the data overlay using three primitives for establishing, returning and deleting a pointer is a feature distinguishes from Pabla's teaching of distributed index for identifying information across computer nodes and Xie's direct utilization of distributed hash table for efficiently locating data among a scalable architect of peer to peer nodes.

An update search on prior art in domains (EAST, NPL-ACM, Google, NPL-IEEE, etc) has been conducted. The prior art searched and investigated in the domains (EAST, NPL-ACM, Google, NPL-IEEE, etc) do not fairly teach or suggest teaching of the

subject matter as described by the combined limitation in each of the independent claims 1, 15, 17 and 23.

Claims (4-14), (16), (18-22) and (24-27) are directly or indirectly dependent upon the independent claims 1, 15, 17 and 23, respectively, and are also distinct from the prior arts for the same reason.

After a search and a thorough examination of the present Application and in light of the prior arts, Claims 1 and 4-27 (renumbered to 1-25) are allowed.

Conclusions

6. Any comments considered necessary by Applicants must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

Contact Information

7. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Kuen S. Lu whose telephone number is (571)-272-4114. The examiner can normally be reached on Monday-Friday (8:00 am-5:00 pm). If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, John Cottingham can be reached on (571)-272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for Page 13 published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-27-9197 (toll free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, please call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kuen S. Lu,



Patent Examiner, Art Unit 2167,

October 9, 2007